

# The Environmental Footprint of Cloud Computing: A Life Cycle Perspective

Willem Vereecken

Department of Information Technology, Ghent University

Supervisor(s): Mario Pickavet, Bart Dhoedt

Currently everything in the Internet seems to be about the cloud. Major vendors like Apple, Microsoft, Google, etc. move their services into the so called cloud, making it easier to have access to your music, documents and pictures at any time and any place. Also, you don't need to bother about cumbersome installation procedures since the cloud vendor takes care of everything.

But did you know that by using the cloud you can also do something for the environment? With cloud computing you can save up to two thirds of the carbon footprint when you use a desktop. You want to know how? It's actually very simple.

The next time you're behind your computer, take a look at how much of your CPU processing power you are using. It's not much, is it. That's because very seldom you use the processor at its full capacity. Not that you don't need it, but only at very particular moments. But that's not only the case for you. Everywhere people are using computers that almost never are used to their full capacity.

What if it were possible to simply collect all this processing power and share it between the users? Then you can have access to the full capacity at that very short time, while your neighbour uses it right afterward. Then we wouldn't need that many processors anymore.

This is exactly what cloud computing does. With cloud computing you don't need your high performing (and high power consuming) computer anymore, but you replace it with a small client device. Some of them are even so small, they fit in an electricity socket! Then, by sharing the computing power in the data centre we have less computers active and consume less power.

But that is not all. Because we are now using less computers, we don't need to manufacture as much. That means we don't consume as much power while manufacturing but also while recycling the waste of the old computers. So you see that cloud computing helps you doing something for the environment. Of course, whether or not we will actually harvest these opportunities largely depends on how the cloud is implemented and if you are willing to replace your good old computer with a cloud device.